Screen Saver Framework Reference

User Experience

2006-05-23

Contents

Introduction

Framework	Library/Frameworks/ScreenSaver.framework
Header file directories	Library/Frameworks/ScreenSaver.framework/Headers
Declared in	ScreenSaverDefaults.h ScreenSaverView.h

The Screen Saver framework defines the interface for subclasses to interact with the Screen Effects user interface feature. Screen Effects modules need to be written in Objective-C with its user interface implemented using Cocoa.

Screen Saver Framework Classes

The Screen Saver framework consists of the ScreenSaverView class, an abstract subclass of NSView. ScreenSaverView defines an interface for animating screen savers, instantiating small preview versions of the screen saver view (for display in the system preferences, for example), and for providing a configuration sheet to set various properties of the screen saver.

The ScreenSaverDefaults class is a subclass of NSUserDefaults and provides an interface to the standard user preferences storage system.

In addition, the Screen Saver framework provides a number of functions commonly required by screen saver applications including producing random values and centering rectangles.

Classes

ScreenSaverDefaults Class Reference

Inherits from	NSUserDefaults : NSObject
Conforms to	NSObject (NSObject)
Framework	Library/Frameworks/ScreenSaver.framework
Availability	Available in Mac OS X v10.0 and later.
Declared in	ScreenSaver/ScreenSaverDefaults.h

Overview

ScreenSaverDefaults defines a set of methods for saving and restoring user defaults for screen savers.

Because screen savers are packaged as bundles and loaded by several different applications, it is not possible to use NSUserDefaults to store user preferences for them. ScreenSaverDefaults adds the method `defaultsForModuleWithName:` (page 9) to get an instance corresponding to a particular module name. Screen savers should typically use their bundle identifier as the module name. Once you have an instance of screen saver defaults, you can use the normal methods of NSUserDefaults to load, store, or modify values.

Tasks

Obtaining the ScreenSaverDefaults Instance

`+ defaultsForModuleWithName:` (page 9)
> Returns a screen saver defaults instance that reads and writes defaults for the module *moduleName*.

Class Methods

defaultsForModuleWithName:

Returns a screen saver defaults instance that reads and writes defaults for the module *moduleName*.

`+ (id)defaultsForModuleWithName:(NSString *)moduleName`

Availability
Available in Mac OS X v10.0 and later.

Declared In
```
ScreenSaverDefaults.h
```

ScreenSaverView Class Reference

Inherits from	NSView : NSResponder : NSObject
Conforms to	NSAnimatablePropertyContainer (NSView) NSCoding (NSResponder) NSObject (NSObject)
Framework	Library/Frameworks/ScreenSaver.framework
Availability	Available in Mac OS X v10.0 and later.
Declared in	ScreenSaver/ScreenSaverView.h

Overview

ScreenSaverView is an abstract class that defines the interface for subclassers to interact with the screen saver infrastructure.

Screen savers are subclasses of ScreenSaverView, packaged up in bundles and loaded by the screen saver application. (These bundles have a suffix of `.saver` and are located in the `Library/Screen Savers` directories of the various file system domains. See *File System Overview* for information about domains.) ScreenSaverView defines an interface for animating screen savers, instantiating small preview versions of the screen saver view (for display in the system preferences, for example), and for providing a configuration sheet to set various properties of the screen saver. In addition, subclasses can set the animation interval, the backing store of their window, and how the screen transitions to the animation.

There are two main ways to do drawing in a screen saver. You can either do your drawing in the normal NSView `drawRect:` (page 15) method, or you can do your drawing in ScreenSaverView's `animateOneFrame` (page 13) method. If you do drawing in `drawRect:` (page 15), you should call `setNeedsDisplay:` with an argument of `YES` in `animateOneFrame`.

Tasks

Initializing a ScreenSaverView

– `initWithFrame:` (page 15)
    Calls `initWithFrame:isPreview:` (page 16) with an argument of `NO`.

– `initWithFrame:isPreview:` (page 16)
    Initializes a newly allocated ScreenSaverView with *frame* as its frame rectangle, and sets the value returned by `isPreview` (page 16) to *isPreview*.

Getting the Preferred Window Behavior

+ `backingStoreType` (page 13)

> Returns the desired backing store for windows in which the screen saver view will be instantiated.

+ `performGammaFade` (page 13)

> Indicates whether the screen saver application should perform a gradual screen fade when it starts and stops the animation.

Setting and Getting the Animation Time Interval

– `animationTimeInterval` (page 14)

> Returns the minimum time between animation frames of the screen saver.

– `setAnimationTimeInterval:` (page 17)

> Sets the time interval between animation frames.

Animating the ScreenSaverView

– `startAnimation` (page 17)

> Activates the periodic timer that animates the screen saver.

– `animateOneFrame` (page 13)

> Advances the screen saver's animation by a single frame.

– `stopAnimation` (page 17)

> Deactivates the timer that advances the animation.

– `isAnimating` (page 16)

> Returns `YES` if the screen saver is currently animating, `NO` otherwise.

Drawing the ScreenSaverView

– `drawRect:` (page 15)

> Draws the screen saver view.

– `isPreview` (page 16)

> Returns `YES` if the screen saver view was created in a smaller size to be used as a preview, `NO` if it was created full-screen for use as a screen saver.

Accessing the Configuration Sheet

– `hasConfigureSheet` (page 15)

> Returns whether the screen saver has an associated configuration sheet.

– `configureSheet` (page 14)

> Returns the window containing all of the controls to be used for configuring the screen saver.

Class Methods

backingStoreType

Returns the desired backing store for windows in which the screen saver view will be instantiated.

```
+ (NSBackingStoreType)backingStoreType
```

Discussion
Subclasses should override this method to return the desired backing store. The default is
`NSBackingStoreBuffered`.

Availability
Available in Mac OS X v10.0 and later.

Declared In
`ScreenSaverView.h`

performGammaFade

Indicates whether the screen saver application should perform a gradual screen fade when it starts and stops the animation.

```
+ (BOOL)performGammaFade
```

Discussion
This class method allows the screen saver view to select how the desktop visibly transitions to the screen saver view. If this method returns `YES`, the screen will gradually darken before the animation begins. If it returns `NO`, the transition will be immediate. The latter behavior is more appropriate if the screen saver animates a screen shot of the desktop, as is the case for optical lens effects. The default is `YES`.

Availability
Available in Mac OS X v10.0 and later.

Declared In
`ScreenSaverView.h`

Instance Methods

animateOneFrame

Advances the screen saver's animation by a single frame.

```
- (void)animateOneFrame
```

Discussion

This method is called each time the timer animating the screen saver fires. The time between calls to this method is always at least `animationTimeInterval` (page 14). It is guaranteed that the focus is locked when this method is called, so subclasses may do drawing in this method. The subclass can also let `drawRect:` (page 15) perform the drawing, in which case `animateOneFrame` needs to call `setNeedsDisplay:` with an argument of `YES`. The default implementation does nothing.

Availability

Available in Mac OS X v10.0 and later.

See Also

– `drawRect:` (page 15)

Declared In

`ScreenSaverView.h`

animationTimeInterval

Returns the minimum time between animation frames of the screen saver.

    - (NSTimeInterval)animationTimeInterval

Availability

Available in Mac OS X v10.0 and later.

See Also

– `setAnimationTimeInterval:` (page 17)

Declared In

`ScreenSaverView.h`

configureSheet

Returns the window containing all of the controls to be used for configuring the screen saver.

    - (NSWindow *)configureSheet

Discussion

This window will be run as a sheet, so it must include buttons that allow the user to end the modal session in which the sheet runs. When the user dismisses the sheet, the controller in charge of the sheet must end the document modal session by calling NSApplication's `endSheet:` with the sheet's window as the argument.

Availability

Available in Mac OS X v10.0 and later.

See Also

– `hasConfigureSheet` (page 15)

Declared In

`ScreenSaverView.h`

drawRect:

Draws the screen saver view.

```
- (void)drawRect:(NSRect)rect
```

Discussion
ScreenSaverView implements drawRect: to draw a black background. Subclasses can do their drawing here or in animateOneFrame (page 13).

Availability
Available in Mac OS X v10.0 and later.

See Also
– animateOneFrame (page 13)
– startAnimation (page 17)
– stopAnimation (page 17)

Declared In
ScreenSaverView.h

hasConfigureSheet

Returns whether the screen saver has an associated configuration sheet.

```
- (BOOL)hasConfigureSheet
```

Discussion
Subclasses that provide configure sheets as part of their bundle should override this method to return YES.

Availability
Available in Mac OS X v10.0 and later.

See Also
– configureSheet (page 14)

Declared In
ScreenSaverView.h

initWithFrame:

Calls initWithFrame:isPreview: (page 16) with an argument of NO.

```
- (id)initWithFrame:(NSRect)frame
```

Availability
Available in Mac OS X v10.0 and later.

Declared In
ScreenSaverView.h

initWithFrame:isPreview:

Initializes a newly allocated ScreenSaverView with *frame* as its frame rectangle, and sets the value returned by `isPreview` (page 16) to *isPreview*.

    - (id)initWithFrame:(NSRect)*frame* isPreview:(BOOL)*isPreview*

Discussion
The screen saver application will install the new view object into the view hierarchy of an NSWindow before the animation begins. This method is the designated initializer for the ScreenSaverView class. Returns `self`.

Availability
Available in Mac OS X v10.0 and later.

See Also
– `initWithFrame:` (page 15)

Declared In
`ScreenSaverView.h`

isAnimating

Returns `YES` if the screen saver is currently animating, `NO` otherwise.

    - (BOOL)isAnimating

Availability
Available in Mac OS X v10.0 and later.

See Also
– `startAnimation` (page 17)
– `stopAnimation` (page 17)

Declared In
`ScreenSaverView.h`

isPreview

Returns `YES` if the screen saver view was created in a smaller size to be used as a preview, `NO` if it was created full-screen for use as a screen saver.

    - (BOOL)isPreview

Discussion
Subclasses can use the return value of `isPreview` to determine if they should change their drawing parameters to something more suitable for display in a smaller frame.

Availability
Available in Mac OS X v10.0 and later.

Declared In
`ScreenSaverView.h`

setAnimationTimeInterval:

Sets the time interval between animation frames.

```
- (void)setAnimationTimeInterval:(NSTimeInterval)timeInterval
```

Discussion
Subclasses with particular requirements for time between animation frames should call this method to set the animation rate to a reasonable value.

Availability
Available in Mac OS X v10.0 and later.

See Also
- animationTimeInterval (page 14)

Declared In
ScreenSaverView.h

startAnimation

Activates the periodic timer that animates the screen saver.

```
- (void)startAnimation
```

Discussion
This method is called when the screen saver view should begin animating. Subclasses can implement this method to set up initial state or allocate expensive resources that should be loaded lazily. Subclasses must call the inherited implementation.

Availability
Available in Mac OS X v10.0 and later.

See Also
- stopAnimation (page 17)

Declared In
ScreenSaverView.h

stopAnimation

Deactivates the timer that advances the animation.

```
- (void)stopAnimation
```

Discussion
This method is called when the screen saver view should stop animating. Subclasses can implement this method to unload expensive resources or reset state to original parameters. Subclasses must call the inherited implementation.

Availability
Available in Mac OS X v10.0 and later.

See Also
- startAnimation (page 17)

Declared In
ScreenSaverView.h

Functions

Screen Saver Functions Reference

Framework: ScreenSaver/ScreenSaver.h

Overview

This chapter describes functions and function-like macros available in the Screen Saver framework.

Several of the functions produce random values. These make use of the C random number generator, `random()`, which the screen saver framework will automatically seed.

Functions by Task

Random Numbers

SSRandomIntBetween (page 22)
> This function returns a random integer value.

SSRandomFloatBetween (page 22)
> This function returns a random float value.

SSRandomPointForSizeWithinRect (page 22)
> This function returns a random point.

Rectangles

SSCenteredRectInRect (page 21)
> This function returns a rectangle.

Functions

SSCenteredRectInRect

This function returns a rectangle.

```
static NSRect SSCenteredRectInRect (
    NSRect innerRect,
    NSRect outerRect
);
```

Discussion
Returns a rectangle, based on centering *innerRect* within *outerRect*.

Availability
Available in Mac OS X v10.0 and later.

Declared In
ScreenSaverView.h

SSRandomFloatBetween

This function returns a random float value.

```
static float SSRandomFloatBetween (
    float a,
    float b
);
```

Discussion
Returns a random float value between the values *a* and *b*, inclusive.

Availability
Available in Mac OS X v10.0 and later.

Declared In
ScreenSaverView.h

SSRandomIntBetween

This function returns a random integer value.

```
static int SSRandomIntBetween (
    int a,
    int b
);
```

Discussion
Returns a random integer value between the values *a* and *b*, inclusive.

Availability
Available in Mac OS X v10.0 and later.

Declared In
ScreenSaverView.h

SSRandomPointForSizeWithinRect

This function returns a random point.

```
static NSPoint SSRandomPointForSizeWithinRect (
   NSSize size,
   NSRect rect
);
```

Discussion

Returns a random point within *rect*, constrained within *(rect.size - size)* from *rect*'s origin.

Availability

Available in Mac OS X v10.0 and later.

Declared In

ScreenSaverView.h

Document Revision History

This table describes the changes to *Screen Saver Framework Reference*.

Date	Notes
2006-05-23	First publication of this content as a collection of separate documents.
	First publication of this content as a collection of separate documents.